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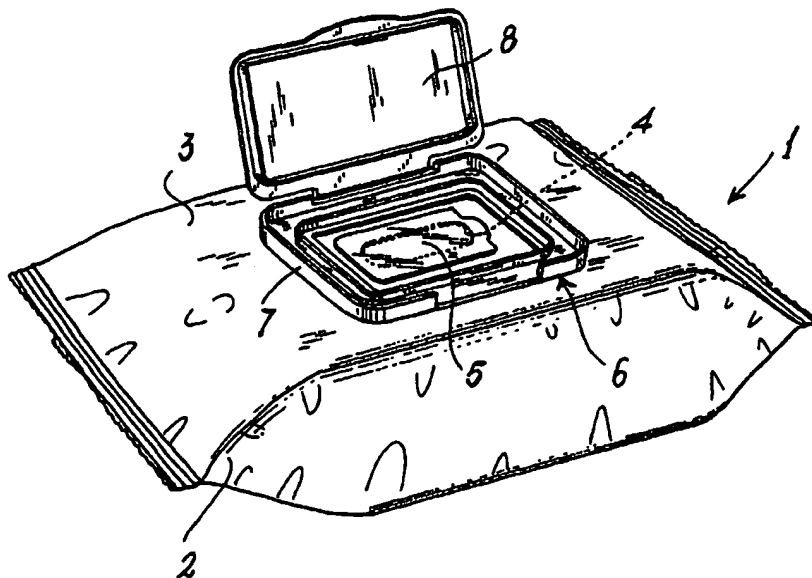
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(54) Title: RIGID CLOSURE ELEMENT FOR, AND QUICKLY FIXABLE TO, A FLEXIBLE CONTAINER FOR EXAMPLE FOR WET WIPES

**(57) Abstract**

A rigid closure element (6) for a flexible container (1), for example for wet wipes, comprises two parts (7, 8) closable one onto the other, a first part (7) being provided with a central hole (7A), said first part (7) acting as a seat for the second part (8) when the element (6) is closed, said first part (7) being fixed to the envelope (2) of the flexible container (1). On that face (10) which faces said envelope (2), said first part (7) supports a double-sided adhesive strip (12) which fixes the closure element (6) to the envelope (2). The container provided with the aforesaid closure element and the machine for producing said container are also claimed.

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RIGID CLOSURE ELEMENT FOR, AND QUICKLY FIXABLE TO, A FLEXIBLE
CONTAINER FOR EXAMPLE FOR WET WIPES

This invention relates to a rigid closure element for a flexible
5 container in accordance with the introduction to the main claim.
The invention also relates to a flexible container with the
aforesaid closure element, and a machine for automatically
producing such a container.

10 Flexible containers are known containing stacked products such as
interleaved tear-off tissues with retention points, wet or non-wet
wipes or other products, which can be individually extracted from
the container. The container comprises a rigid element for
closing its extraction aperture, preferably in a position
15 corresponding therewith. This element is fixed to said container
by methods, for example by hot-gluing or welding the parts
together, which result in a considerable production time, a low
production rate and a consequent high production cost, which is
then added to the cost of the finished product to the public.

20

It should be noted that the term "rigid" with reference to the
closure element means an element which can be considered rigid
compared with the flexible envelope of said container, said
closure element being able however to undergo small deformations
25 if suitably stressed.

Precisely because of the fact that the container is flexible, some
difficulty may be encountered in opening the rigid closure
element, especially with one hand.

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An object of the invention is to provide a rigid closure element for a flexible container of the aforesaid type which is easy to produce and to fix to the container.

- 5 A further object is to provide a flexible container with rigid closure element of short production time, of low production cost and hence of low cost to the public.

A further object is to provide a machine for producing the said
10 container which is versatile in use and results in a high industrial yield in terms of production cost and number of articles produced.

These and further objects are attained by a closure element, a
15 container and a machine for its production in accordance with the accompanying claims.

The invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and on which:

20

Figure 1 is a perspective view of a container according to the invention;

Figure 2 is an underside view of a closure element of the invention for the container of Figure 1;

- 25 Figure 3 is a schematic view from above showing a machine according to the invention for producing the container of Figure 1;

Figures 4 to 6 are schematic side views showing various parts of the machine of Figures 3 and 4;

- 30 Figure 7 is a different embodiment of the invention.

With reference to the said figures, a flexible container for containing products such as wet wipes, tissues or the like is indicated overall by 1. It comprises an envelope 2 (for example
35 of impermeable plastic such as polyester, polypropylene, polyethylene or the like, in single or multi-layer form), in a face 3 of which there is an aperture 4 for extracting the product

- contained in the container. When forming the container, over the aperture 4 there is placed a usual removable label 5 which is removed to extract the product from said container 1 for the first time. About said aperture 4 there is positioned on the face 3 a
- 5 closure element 6 for said aperture. The element 6 comprises two portions 7 and 8 hinged together in known manner, a first portion 7 having in the illustrated example a substantially annular shape defining a central hole 7A, and being able to receive and retain in known manner the second portion 8 when closed onto the first.
- 10 The first portion is positioned about the aperture 4. The portion 7 can also be shaped differently, for example with a central hole defined by flexible tabs projecting from the edges of said portion towards its centre where the hole 7A is provided.
- 15 According to the invention, on that face 10 of the first portion 7 which faces the container 1, the closure element 6 is provided with an least one double-sided adhesive element or strip 12 for fixing said portion 7 to the container 1. The strip 12 can either cover the entire face 10 or consist of a plurality of parts (for
- 20 example two 12A, 12B as in Figure 2) positioned along the annular portion 7. By means of this double-sided adhesive strip the element 6 can be easily, quickly and automatically fixed to the envelope 2 of the container 1. The strip 12 comprises in known manner two opposing faces both carrying an adhesive element. Each
- 25 adhesive element is protected prior to use by a usual covering, for example of silicone-coated paper. By removing this paper the strip 12 can be bonded both to the portion 7 and to the envelope 2.
- 30 The closure element 6 is prepared with the strip 12 and then fixed to the envelope 2 of the container 1 by the machine shown overall in Figure 3 and in detail in terms of its individual main parts in Figures 4 to 6. This machine for producing the container 1 is indicated overall by 15 and comprises at least three different
- 35 stations, namely: a first station 16 in which a plurality of double-sided adhesive strips 12, supported on a reel, are associated with the portion 7 of a corresponding plurality of

elements 6; a second station 17 in which the portion 8 of each element 6 is labelled; and a third station 18 in which the element 6 is fixed to a corresponding envelope 2.

5 More specifically, the first station 16 comprises a structure 20 on which a conveyor belt 21 moves in known manner. On the structure there is positioned a holder 22 holding closure elements 6 which are loaded onto the belt 21 in any known manner, for example by a pusher (not shown), at a predefined rate which can be
10 adjusted at will on the basis of the production rate chosen for the containers 1. The elements 6 are positioned on the belt 21 in their closed state with the portion 8 facing downwards. With the structure there is also associated a labelling machine 24 arranged to deposit onto each element 6 a corresponding double-sided
15 adhesive strip 12 of suitable dimensions. This labelling machine, of known operation, comprises a roller 25 on which there is loaded a reel 23 supporting a plurality of double-sided adhesive strips in the form of labels having a shape corresponding to that of the face 10 of the element 6. The labelling machine also comprises a
20 usual member 26 for adjusting the rotational speed of the roller 25 and hence of the roller supporting the strip 12, and a plurality of deviation rollers 27. Each strip 12 is deposited on a corresponding element 6 by a distributor member 28 (distributor blade). Finally, the structure 20 comprises usual members 30 for
25 driving the belt 21 and for adjusting its speed, and a usual central control unit 31.

The conveyor belt (or equivalent member) 21 carries the elements 6 provided with the double-sided adhesive strip 12 onto a conveyor
30 belt (or equivalent transporting member) 33 of the station 17. The belt 33 is slotted centrally to enable a labelling machine 35 to deposit onto the portion 8 of the element 6 a label relative to the product contained in the container 1 and held on an appropriate reel of labels. The labelling machine 35 is similar
35 to the aforesaid labelling machine 24 and will therefore not be further described. Parts corresponding to those of the labelling machine 24 are indicated in the figures by the same reference

numerals followed by the letter A. This labelling machine is positioned below the plane in which the conveyor belt 33 travels. From the station 17, the closure element 6 is transferred to the station 18 (for example by the conveyor belt 33). In this station, each element 6 is deposited on a conveyor belt (or similar member) 40 and is conveyed below a member 41 able to remove the protection covering from the second adhesive face of the double-sided adhesive strip associated with the element 6. The member 41 comprises a film 42, which has an adhesive face 43 facing the conveyor belt 40 and unwinds from a first roller 44 to rewind on a second roller 45. Usual rollers 46 tension the film, and a roller 47 brings it into contact with the double-sided adhesive strip 12 positioned on the element 6. This contact results in removal from the strip 12 of the usual covering protecting the adhesive element applied to the element 6. Said unwinding takes place intermittently, only when an element 6 is present below the member 41 (and specifically below the roller 47). Known proximity sensors activate this movement when they sense said presence.

After the intervention of the member 41, the conveyor belt 40 operates to move the closure element 6 into a region 49 of the station 18 which receives the envelopes 2 already prepared in known manner. The envelopes 2 arrive along a conveyor belt 50 (or other transporting member) perpendicular to the operational line of the machine 15, as shown in Figure 3. The envelopes 2 are released by their conveyor 50 into the region 49 and are retained by a retention member, for example of gripper type 51 (or a similar retention member). This gripper member is positioned below a presser member 52, for example pneumatically operated. The jaws of the gripper are moved apart when the presser 52 is operated. For this operation, the presser member 52 is controlled by sensor means, for example photoelectric cells, not shown, which sense the presence of the envelope 2 below the member 52.

Likewise, below the gripper member 51 there is provided a further gripper-type retention member 55 (or similar retention member) arranged to support each element 6 arriving in the region 49 of

6

the station 18 of the machine 15.

This member is similar, for example, to the said member 51 and enables the element 6 to be retained when the envelope 2, released
5 by the member 51, is pressed onto it by the presser member 52. The member 55 retains this element (and the envelope 2) for sufficiently long a time to enable the presser member 52 to compress the envelope 2 against the element 6 and fix it thereto
10 by the double-sided adhesive strip 12. This time is controlled by an operation control member for the machine 15 (of known type and not shown), which controls the operation of each of its stations 16, 17 and 18.

In the region 49, the structure 60 of the station 18 has an
15 aperture 61 through which the now formed container 1 (with the closure element 6 fixed to the envelope 2) can pass to a conveyor element 63 which conveys it to a store or the like. Passage through the aperture 61 takes place by gravity on opening the gripper member 55.

20

By virtue of the invention, the double-sided adhesive strip 12 can be used to automatically fix a closure element to the envelope and thus form the flexible container 1. The aforescribed machine 15 is of versatile use and its productivity can be varied in line
25 with production requirements. This can be achieved very simply and at lower cost than with known flexible container production machines.

A preferred embodiment of the invention has been described.
30 Others are however possible in the light of the foregoing description. For example, the described machine 15 can be associated directly with the machine which prepares the flexible envelopes 2, which in this case, by using the means included in the machine 15, can actually complete the finished product during
35 the formation of each envelope 2.

A further embodiment of the invention is shown in Figure 7,

wherein the envelope 2 is shown with its closure element in the opened position.

As stated, the parts 7 and 8 of the element 6 are hinged together,
5 between the first part 7 and the second part 8 there extending an elastically deformable element 130 (in this specific case a tang) which opposes the approach of the second part (8) to the first part (7). One end of the tang 130 faces an inverted U-shaped rib 140 projecting from the inner face of the second part 8, the other
10 end of the tang 130 facing a frame-shaped rib 150 bounding the central hole 7A of the first part 7.

The presence of the tang 130 ensures that when the closure element 6 is closed, by pressing with at least one finger on a flat
15 projection 170 of the first portion 7 the second part 8 opens automatically to assume the opened configuration of Figure 7. In this respect, pressing the flat projection 170 causes the closure element 6 to undergo small deformations which automatically release the second part 8 from the first part 7, this being
20 facilitated by the high deformability of the envelope 2.

Claims:

1. A rigid closure element (6) for a flexible container (1),
for example for wet wipes, comprising two parts (7, 8) closable
one onto the other, a first part (7) being provided with an
5 aperture (7A), the second part (8) closing onto said first part
(7) to close the aperture (7A), said first part (7) being fixed to
the envelope (2) of the flexible container (1), characterised in
that on that face (10) which faces said envelope (2), said first
part (7) supports a double-sided adhesive strip (12) which fixes
10 the closure element (6) to the envelope (2).
2. A closure element as claimed in claim 1, characterised in
that the double-sided adhesive strip (12) covers the entire face
(10) of its first part (7).
15
3. A closure element as claimed in claim 1, characterised in
that the double-sided adhesive strip (12) covers only part of the
face (10) of its first part (7).
- 20 4. A closure element as claimed in claim 1, characterised in
that an elastically deformable element (130) opposes the approach
of the second part (8) of the closure element (6) to its first
part (7).
- 25 5. A closure element as claimed in claim 4, characterised in
that the elastically deformable element is a tang (130).
6. A closure element as claimed in claim 4, characterised in
that the first part (7) comprises a flat projecting portion (170)
30 adhering to the envelope (2) and of which the slight deformation
on being pressed with the fingers causes the two parts (7 and 9)
to disengage.
7. A machine for producing a flexible container (1)
35 comprising an envelope (2) having an aperture (4) about which a
rigid closure element (6) in accordance with claim 1 is

positioned, characterised by comprising means (24) for fixing a known double-sided adhesive strip (12) to a face (10) of a part (7) of the closure element (6) by means of the adhesive present on a face of said strip (12) which is brought into contact with the face (10) of the part (7) of the closure element (6), removal means (41) for removing from the other face of the double-sided adhesive strip a usual protection element for the adhesive present on said other face and prearranging it for its fixing to the envelope (2) of the container (1), presser means (52) for compressing said envelope onto that face 10 of the closure element (6) provided with double-sided adhesive strip (12), and counteracting means (55) for supporting said envelope (2) and the closure element (6) during the pressing action of the presser means (52).

15

8. A machine as claimed in claim 7, characterised in that the means (24) for fixing each double-sided adhesive strip (12) to each closure element (6) are a labelling machine the carrier roller (25) of which carries a roll supporting a plurality of said strips, each of these latter being preshaped in accordance with that part (7) of the closure element (6) to which it is to be fixed.

9. A machine as claimed in claim 8, characterised by comprising a conveyor member (21) for conveying a plurality of closure elements (6) from a holder (22) containing these latter to the labelling machine 24, the conveying taking place at a predetermined speed and with selective feed of the closure elements (6) to the conveyor member (21).

30

10. A machine as claimed in claim 7, characterised by comprising a further labelling machine (35), for depositing a label on the second part (8) of the closure element (6).

11. A machine as claimed in claim 7, characterised in that the removal means (41) comprise a film (42) provided with adhesive on one face (43) and arranged to cooperate with the double-sided

adhesive strip (12) positioned on the closure element (6) in order to remove its protection element, said removal means (41) comprising a carrier roller (44) from which the film (42) unwinds, a winding roller (45) on which the film and the removed protective
5 element rewind, and a presser member (47) which presses the film into contact with the double-sided adhesive strip (12) when the closure element (6) passes under it.

12. A machine as claimed in claim 7, characterised in that the
10 presser means are a pneumatic presser (52), the counteracting means being a retention member (55) with movable support elements, and being positioned below the pneumatic presser (52).

13. A machine as claimed in claim 12, characterised in that a
15 further retention member (51) is provided between the presser (52) and the retention member (55), to support a flexible envelope (2) originating from its own production line, said further retention member (51) comprising movable support elements arranged to
20 release the envelope onto the closure element (6) supported by the underlying retention member at least during operation of the presser (52).

14. A machine as claimed in claims 12 and 13, characterised in
that each retention member (51, 55) is a gripper member with
25 movable jaws.

15. A machine as claimed in claim 7, characterised by
comprising means for controlling and operating each of its members
in such a manner as to enable the production rate to be modified
30 and preset at will.

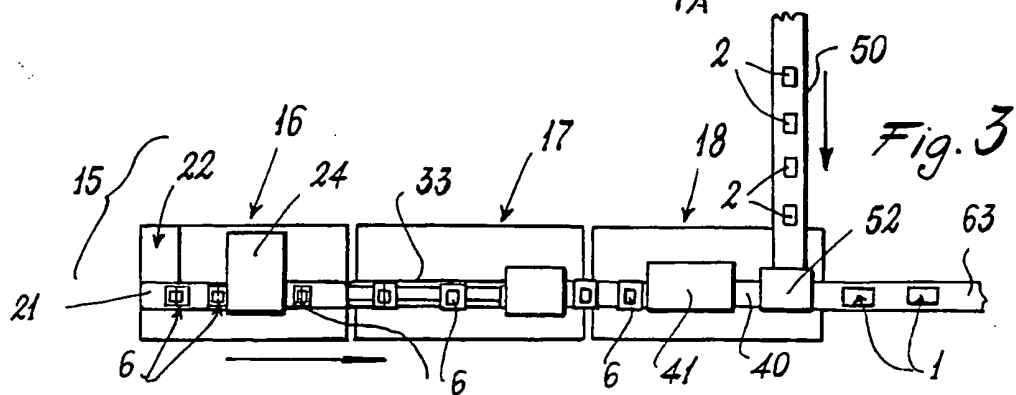
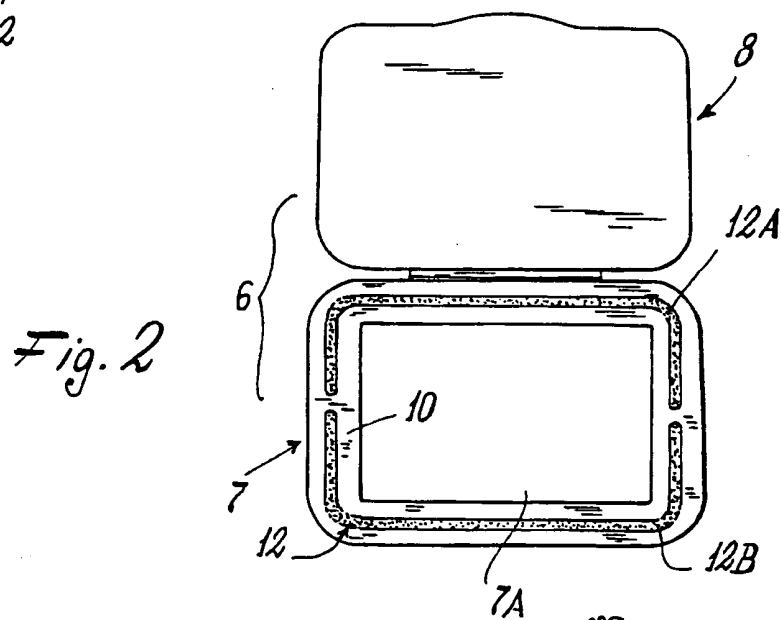
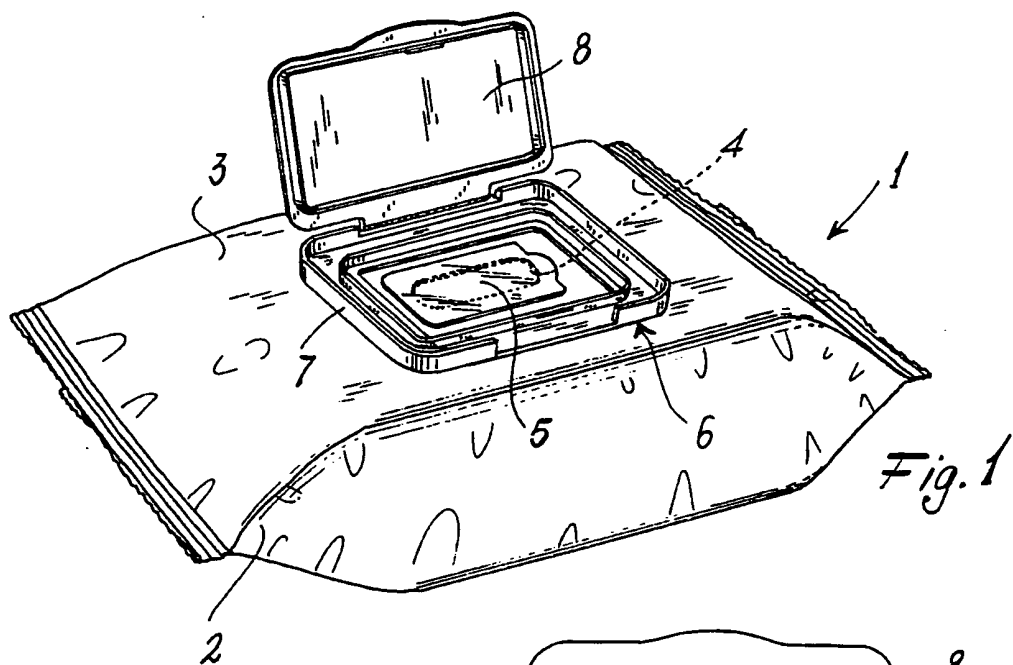
16. A machine as claimed in claim 7, characterised by
comprising, for the product flexible containers (1), collection
means (63) positioned below the movable retention member (55).
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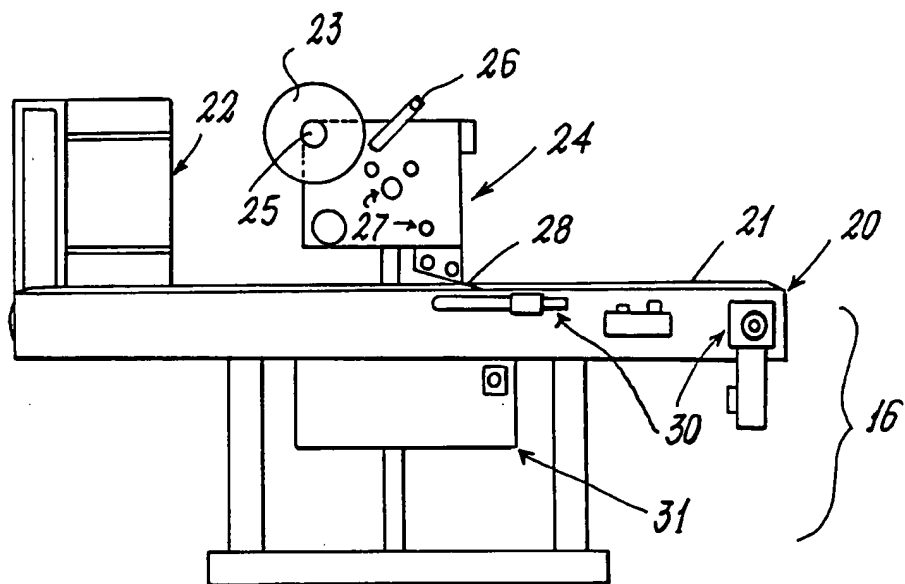
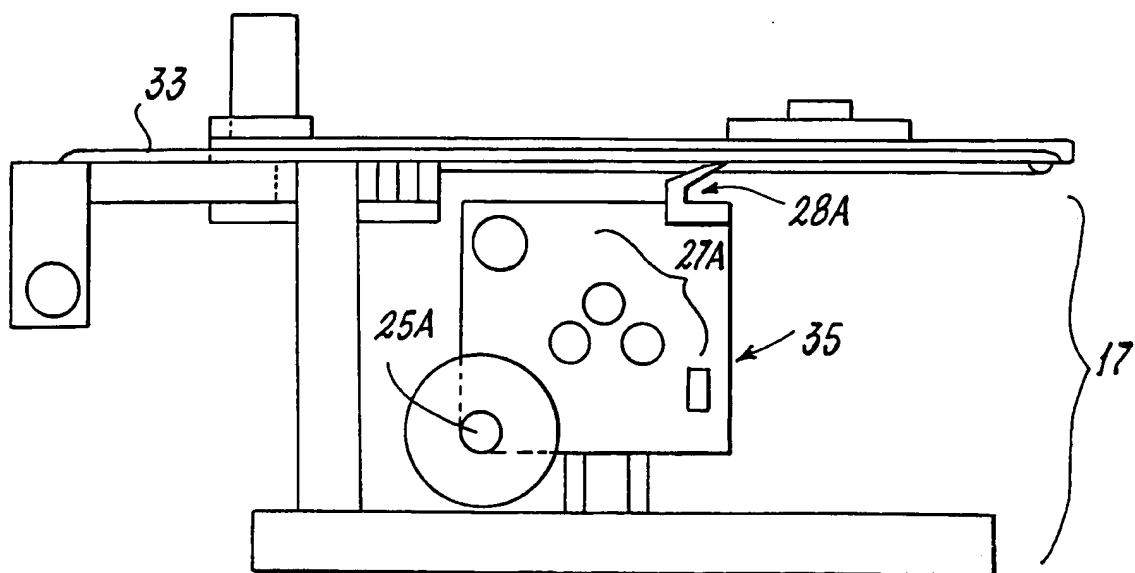
17. A machine as claimed in claim 7, characterised by being
part of a machine for preparing flexible envelopes (2) for

products in sheet form such as wet wipes or the like.

18. A flexible container comprising a flexible envelope (20)
provided with an aperture (4) closed by a rigid closure element
5 claimed in claim 1.

19. A container as claimed in claim 18, characterised by being
produced by the machine claimed in claim 7.



*Fig. 4**Fig. 5*

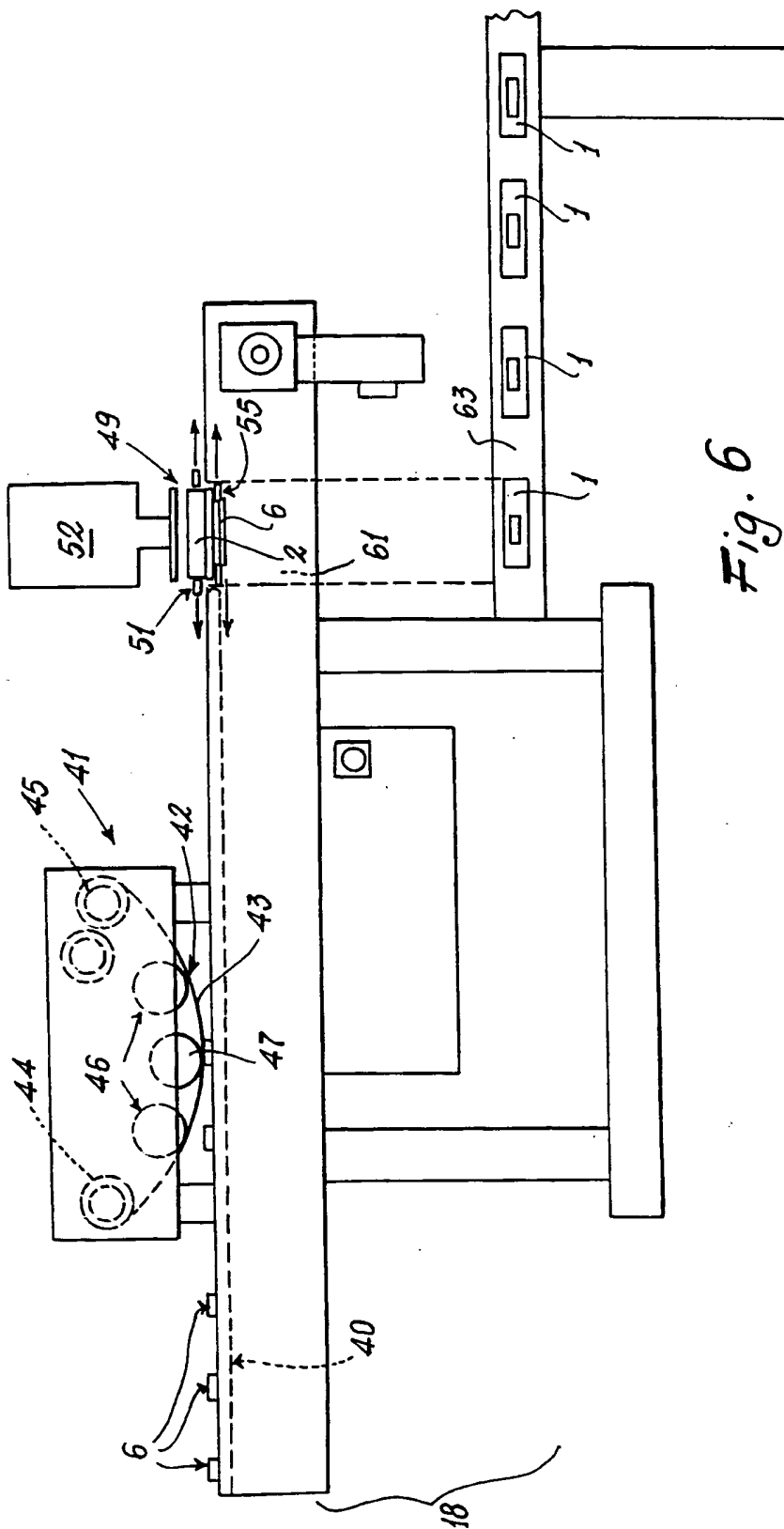


Fig. 6

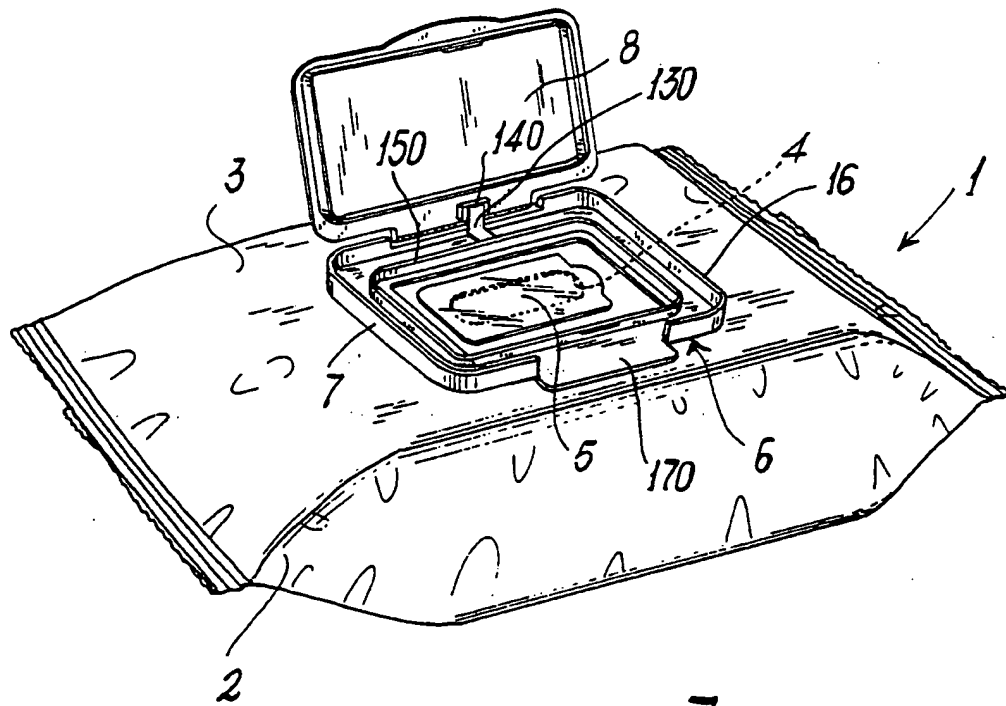


Fig. 7

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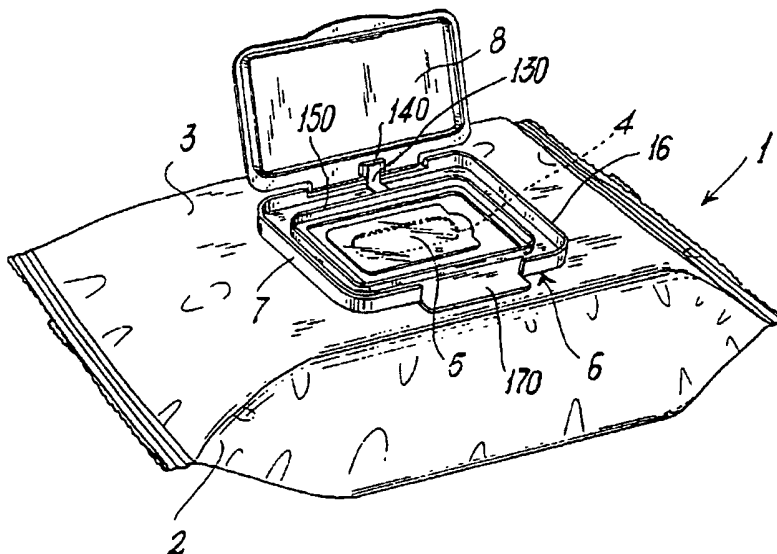
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(54) Title: RIGID CLOSURE ELEMENT FIXABLE TO A FLEXIBLE CONTAINER FOR EXAMPLE FOR WET WIPES



(57) Abstract: A rigid closure element (6) for a flexible container (1), for example for wet wipes, comprises two parts (7, 8) closable one onto the other, a first part (7) being provided with a central hole (7A), said first part (7) acting as a seat for the second part (8) when the element (6) is closed, said first part (7) being fixed to the envelope (2) of the flexible container (1). On that face (10) which faces said envelope (2), said first part (7) supports a double-sided adhesive strip (12) which fixes the closure element (6) to the envelope (2). The container provided with the aforesaid closure element and the machine for producing said container are also claimed.

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According to International Patent Classification (IPC) or to both national classification and IPC

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 315 263 A (RICHARDS JOSEPHINE) 28 January 1998 (1998-01-28) page 2, line 23 -page 5, line 11 figure 1	1-3, 18, 19
Y	---	4-6
Y	EP 0 748 748 A (DAINIPPON PRINTING CO LTD ;UNI CHARM CORP (JP)) 18 December 1996 (1996-12-18) column 10, line 16 -column 11, line 22 figures 17-19	4-6
A	---	1, 18, 19
	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 12, 25 December 1997 (1997-12-25) & JP 09 216672 A (KURESHIA:KK), 19 August 1997 (1997-08-19) abstract	

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- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

21 August 2000

Date of mailing of the international search report

19/12/2000

Name and mailing address of the ISA

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Authorized officer

Farizon, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/03564

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DE 93 17 973 U (BRAEM GUENTHER) 23 June 1994 (1994-06-23) page 5, line 7 -page 5, line 21 figures 1.8,1.9 -----</p>	1,18,19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 00/03564

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-3, 18, 19

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3,18,19

Closure element

1.1. Claims: 1,,2,3.18,19

Limited application of adhesive strip

1.2. Claims: 1,4-6

Hinged closure biased toward open position

2. Claims: 7-17

Machine for applying adhesive strip to a closure element and
applying the closure element to a flexible container

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/03564

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2315263 A	28-01-1998	NONE	
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		AU 709893 B	09-09-1999
		AU 5596896 A	02-01-1997
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